

# Some Observations on the Incidence of Malaria in Macherla (A.P)

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**Abstract:** A study on the prevalence of malaria in 2200 households was carried out in the surroundings of KCP Cement factory in Macherla (A.P). A total of 337 blood samples were collected (April 1998 – March 1999) using standard methods. The observations showed 11 positive cases; *Plasmodium vivax* (7 cases) and *P. falciparum* (4 cases) were prevalent in the study area. Humans of 15 years and above were mostly affected by the parasite. There was no significant difference in the prevalence of malaria in between males and females.

**Keywords:** Prevalence of malaria, epidemiology, *P. vivax* & *P. falciparum* and Macherla.

## I. INTRODUCTION

In spite of the efforts made by World Health Organization in 1960 s to eradicate malaria worldwide, malaria still stands as a major tropical disease. In India several investigations have reported atleast two million cases from epidemic areas. The clinical symptoms of *P. falciparum* and *P. vivax* include fever, anemia, jaundice and splenomegaly. In case of *P. falciparum* humans show more clinical symptoms. The prevalence and severity of infection is especially high in rural areas in working communities where health and sanitation conditions are not properly maintained (Dev et al., 2006). Malaria is a major public health illness characterized by high rise in malaria cases and deaths due to *P. falciparum* (Prakash et al., 2000). North Eastern (N.E) states of India are malaria endemic and toll about 10 to 12% of cases and more than 20% of deaths annually (Dev et al., 2003). Malaria may be evenly distributed across the places with varying risk factors and intensities; transmission of malaria be maintained by *Anopheles minimus* in foot hill villages (Dev et al., 2004; 2009). During resistant foci multiplied and spread widely in most parts of India with an increase of *P. falciparum* from 13% in 1998 to presently 50% (Sharma 1996; 2000; Mahapatra et al., 2003). Malaria transmission is perennial and persistent in most parts of Assam mostly transmitted by *A. minimus*. Epidemiological studies in some of the tribal inhabited areas of Assam and Arunachal Pradesh revealed that malaria is comparatively high among tribal population (Dutta, 1992; 1995). Due to rapid urbanization and various developmental activities, the socio-cultural systems have been impaired (Singh, 1994). Human ecology, social-economic status and housing pattern are responsible for high transmission of malaria in some ethnic communities of Assam and Arunachal Pradesh (Dutta et al., 1999). *P. falciparum* malaria is predominant over *vivax* constituting more than 80% of the total positive cases. The present study was therefore, undertaken with a view to investigate the prevalence of malaria in working population around KCP Cement factory, Macherla (A.P).

## II. MATERIALS & METHODS

The study was made in a rural area and semi urbanized community of the surroundings of the KCP cement factory, Macherla which is surrounded by river Chandravanka. The study comprises of 2200 households. Three hundred thirty seven blood samples of different age groups complaining high fever were examined during April 1998 to March 1999. Thin and thick blood smears were prepared and examined for malaria parasites (*P. falciparum* and *P. vivax*) using 100X oil immersion objective after Leishman's, JSB – 1 and JSB – 2 staining. People under survey area were classified into five age groups like 0-1, 1-4, 5-8, 9-14 and > 15 years following WHO recommendations. The incidence of malaria was determined according to the method described by WHO (1980).

## III. RESULTS

In the present survey it was found that people living in huts were mostly affected by the infection. The housing pattern and socio-economic conditions have been playing a significant role for the transmission of malaria. Out of 12584 populations, 337 blood samples were collected and screened for malaria (Table 1). The observations are shown in Table 2. The (ABER) positive cases 2.7% of five incidence in the study area. The (AP 1) was found to be 0.8. It is of interest to note that the malaria positive cases were found from June to December 1998(except in January and February, 1999). The (SPR), (SVR) and (SFR) were found to be 3.2%, 2.07% and 1.8% respectively. It is observed that fever incidences is alarming since July 1998 to December 1998 which is the season of malaria transmission. The age group

subjected to the fever incidence was 15 and above; the people belonged to this age group are the earning members of the family respective of sex. The incidence of malaria was found to be almost equal in both males (166 cases) and females (171 cases). The gradual raise of 5 incidences from June 1998 to September 1998 indicated the malaria transmission region. It was also found that the age group 15 years and above was significantly attacked by the parasite.

#### IV. DISCUSSION

The housing and clothing pattern of the majority of the people living in the study area are conducive. Inadequate epidemiological surveillance and incomplete treatment are some of the major constraints for reducing and/or eliminating the disease. The observations of the present study suggests that the examination of the peripheral blood smears is the reliable method for the detection of the malarial parasites in surveys as well as in the diagnosis of malaria. Spielman (1998) and Sehgal et al., (1977) also stated that the microscopic examination of the peripheral blood smear is to be considered a reliable method for detecting malaria in endemic areas all over the world. The present studies showed 3.0% of people suffering from clinical signs of malaria; 1.0% from *P. falciparum* malaria and 2.0 % *P. vivax* malaria. Malaria situation is getting worse in the surveyed area; comparatively spread of *Vivax* malaria is more than *falciparum* malaria. Our studies are similar to that of Manohar and Jah (1997) who also explained that about 1% of people live in the different areas of the world die due to *falciparum* malaria. It is also found that children (below 3 years) are at special risk with malaria because they possess suboptimal immune response as suggested by Hyde and Patnode (1987). The age distribution of cases and clinical observation in our study is in accordance with the finding of other workers (Nandi et al., 2000; Yadav and Sharma, 1995). This type of endemic disease in surroundings of Cement factory is not an unusual phenomenon in India. The high incidence of malarial cases was reported in September, October and December 1998 and in March, 1999 during the survey period. The high incidence of malaria is correlated with the mosquitogenic period. Barua and Mahanta (1996) also suggested the peak coincidence of malaria with the mosquitogenic period and other mosquito borne diseases in Assam and Nagaland. Epidemic malaria caused considerable morbidity (without mortality) largely due to *P. falciparum* as the main key- parasite in disease outbreaks. Yadav et al., (1999) also suggested *P. falciparum* as the key – player in malarial outbreaks in rural/working communities.

#### ACKNOWLEDGMENT

The author (P.J.R. Nathanael) expresses his deep noble gratitude to his father Rev. Dr. P. Nirmal, for his benevolent support and guidance throughout his research. The author solemnly dedicates this paper to his beloved Pastor late J. S. Manoharan (T. P. M) who rested in the Lord.

TABLE I  
STATEMENT SHOWING THE DATA OF AGE WISE, MONTH WISE AND SEX WISE BLOOD SAMPLE COLLECTION

Month of survey	Age Group												Grand total
	0-1		1-4		5-8		9-14		15 above Total		Total		
	M	F	M	F	M	F	M	F	M	F	M	F	
Apr 98					1	1	2	4	5	3	8	8	16
May 98							1	1	3	2	4	3	7
June 98				1	1		1	2	7	9	9	12	21
July 98			1			1	1	1	12	14	14	16	30
Aug 98		1	1	1	2	1	2	2	14	15	19	20	39
Sept 98	1	1	2	3	3	1	4	6	14	10	24	21	45
Oct 98	2	1	3	2	4	5	2	4	7	10	18	22	40
Nov 98					5	7	4	6	8	7	17	20	37
Dec 98			3	1	4	2	7	3	9	12	23	18	41
Jan 99			1	1	1	1	0	1	2	4	4	7	11
Feb 99	1			1		1	2	1	5	2	8	5	13
Mar 99	1	2	2	1	3	4	7	6	5	6	18	19	37
Total	5	5	13	11	24	24	33	37	91	94	166	171	337

M – Male; F – Female

TABLE III  
STATEMENT SHOWING THE DATA OF AGE WISE, MONTH WISE AND SEX WISE PARASITIC SPECIES WISE POSITIVE CASES

Month of survey	Age Group												
	0-1		1-4		5-8		9-14		> 15		Total		Grand total
	M	F	M	F	M	F	M	F	M	F	M	F	
Apr 98													
May 98													
June 98									1 P.v		1 P.v		1 P.v
July 98										1 P.f		1P.f	1P.f
Aug 98									1 P.v		1 P.v		1 P.v
Sept 98						1P.v	1 P.v				1P.v	1P.v	2 P.v
Oct 98									1P.v	1P.f	1P.v	1P.f	1P.v + 1P.f
Nov 98													
Dec 98								1 P.f	1P.v		1P.v	1 P.f	1P.v + 1P.f
Jan 99													
Feb 99													
Mar 99			1P.v					1P.f			1P.v	1P.f	1P.v + 1P.f
Total			1P.v		1P.v		1P.v	2P.f	4P.v	2P.f	6P.v	4P.f + 1P.v	7P.v + 4 P.f
Grand			1		1		1      2		4      2		6      4+1		11

M - Male; F - Female; P.v – *Plasmodium vivax*; P.f – *Plasmodium falciparum*

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